

RECEIVED
CENTRAL FAX CENTER
OCT 02 2008

In the Claims:

Kindly amend claims the claims as follows:

Kindly cancel claim 1-4 without prejudice.

1-4. (Cancelled)

5. (Currently amended) ~~The apparatus of claim 4~~ A sensor apparatus for tank volume change, comprising a tank, a telephone grade optical fiber coated with adhesive would on the tank, and having the adhesive cured on the tank, adhering the fiber on the tank and ruggedizing the fiber on the tank, the optical fiber having opposite ends exposed for receiving and outputting light energy, and a covering over the optical fiber., wherein the optical fiber is wound helically in first spaced coils over the tank in a first direction and is wound helically in second spaced coils over the tank and over the first spaced coils in a second direction, and wherein the first spaced coils form the obstructions and the second spaced coils form the bends where the second spaced coils cross over the first spaced coils as pinch points, wherein the tank comprises an aluminum tank liner, and the covering comprises a strengthening wrap would over the composite gas storage tank, wherein the fiber is squeezed between the tank liner and the strengthening wrap as the tank liner is pressurized, deforming the pinch points.

6. (Original) The apparatus of claim 5, wherein the first and second spaced coils are secured to the tank.

7. (Original) The apparatus of claim 5, wherein the bends and the pinch points are secured to the tank with a flexible adhesive.

8. (Currently amended) A method of providing sensors for tank volume changes, comprising:
providing a tank;

providing an optical fiber on the tank;

providing obstructions on the tank liner;

providing pinch points in the optical fiber by crossing the optical fiber over the obstructions;
securing the entire optical fiber or at least the pinch points to the tank;
providing and exposing ends on the optical fiber for receiving light and outputting light; and
covering the optical fiber and the tank.

9. (Original) The method of claim 8, wherein the providing the tank comprises providing a cylindrical tank liner, wherein the providing an optical fiber and obstructions on the tank comprises winding the optical fiber in first spaced helical convolutions in a first direction along the cylindrical tank liner and winding the optical fiber in second spaced helical convolutions in a second direction along the cylindrical tank liner and forming the pinch points in the second spaced helical convolutions where they cross over the first helical convolutions of the optical fiber.

10. (Original) The method of claim 9, wherein the covering comprises covering the optical fibers with an isolator layer.

11. (Original) The method of claim 10, wherein the covering further comprises providing filament windings over the isolator layer of the optical fiber and over the tank liner for supporting internal pressures within the tank liner.

12. (Original) The method of claim 9, wherein the securing comprises coating the optical fiber with a settable adhesive as the optical fiber is wound on the tank.

13. (Original) The method of claim 9, wherein the securing comprises coating crossover pinch points with a flexible settable adhesive.

14. (Previously Presented) The method of claim 11, further comprising connecting a light source to one end of the optical fiber and connecting a light sensor to the other end of the optical fiber, increasing pressure within the tank liner, increasing bending in the pinch points by resisting the increasing pressure with the filament windings, and observing transmitted light attenuation in the light sensor related to expansion of the tank liner and increasing bending of the pinch points.

15. (Previously Presented) Pressure tank apparatus, comprising a tank having an inlet and outlet, an optical fiber secured to an outer surface of the tank and having opposite ends for receiving and

outputting light, the opposite ends being fixed near the inlet and outlet for connecting respectively to a light source and to a light sensor as the tank is filled with gas under pressure, the optical fiber crossing on the outer surface of the tank and forming bends and pinch points at the crossings, and a composite material overwrap covering the optical fiber and for withstanding internal pressure within the tank and resisting expansion of the tank.

16. (Previously Presented) The apparatus of claim 15, further comprising optical couplings connected to the ends of the fibers and secured to the inlet and outlet of the tank.

17. (Previously Presented) The apparatus of claim 15, further comprising thin adhesive connecting the optical fiber to the outer surface of the tank.

18. (Previously Presented) The apparatus of claim 17, further comprising a relatively flexible adhesive at the optical fiber bends (pinch points).

19-20. (Cancelled)

21. (New) A pressurized fluid storage tank apparatus comprising a fluid impervious aluminum tank liner for containing the fluid under pressure the fluid impervious liner having cylindrical a body with a closed hemispherical end and an opposite fluid transfer connection neck,

a tank liner expansion indicating telephone grade optical fiber helically wrapped around and bonded to the tank liner with epoxy or polyurethane bonding agents in crossed first and second helixes from the neck to the closed end and back to the neck, the telephone grade optical fiber in the second helix having cross over points, the fiber having first and second ends, the first and second ends of the fiber mounted near the neck of the tank, and first and second optical connectors on the first and second ends of the telephone grade optical fiber for connecting to a laser light source and a light intensity sensor to the first and second ends respectively,

an outer composite strength-providing wrapped layer around the cylindrical body and the hemispherical end and around the crossed helixes of the optical fiber for preventing excessive

outward expansion and failure of the fluid impervious liner and for squeezing the cross over points of the optical fiber between the fluid impervious tank liner and the outer strength-providing layer.

22. (New) The apparatus of claim 1, wherein the squeezing of the crossover points of the fiber optic cable results in a diminution of the high intensity sensed at the sensor.

23. (New) The apparatus of claim 21, wherein the light intensity sensed by the sensor has an inverse linear relation to pressure within the tank liner.